DOCUMENT RESUME

ED 250 918 FL 014 657

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TITLE How Important Is Accuracy/Mastery for Chinese Students Learning English as a Foreign Language?
PUB DATE Aug 84
NOTE 16p.; A preliminary report on this study was given at the Annual Meeting of the Teachers of English to Speakers of Other Languages (Houston, TX, April 1984). Questionnaire has blurred print.
PUB TYPE Reports - Research/Technical (143)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Communication Skills; Communicative Competence (Languages); *Educational Needs; *Educational Objectives; Language Attitudes; *Language Fluency; Scientists; *Second Language Learning
IDENTIFIERS *Chinese People; *English for Science and Technology

ABSTRACT

Part of a study of the oral communication skills of Chinese scientists in an intensive course in English for science and technology focused on the importance of attaining accuracy or mastery for their specific language needs and the error tolerance level of English-speaking scientist peers. Three students in each of three different science specialties at the Graduate School English Language Center in Beijing were chosen as subjects for speech samples of two types: one a planned presentation as in a formal, professional setting; the other, unplanned, informal conversation. The three students in each specialty had language skills considered good, average, and weak. Native English-speaking scientists and English teachers evaluated the taped speech samples. Results suggest that the Chinese scientists probably could function adequately in formal and informal professional settings and have adequate speech speed, but with only acceptable grammar. It is also concluded that the program had successfully lowered the psychological barrier about making mistakes in English. Adjustment of language programs' expectations of accuracy and fluency to meet the real language needs of the students, weighing grammatical accuracy against other factors such as word choice and pronunciation, is recommended. Appendices consist of the evaluation questionnaire and two statistical tables showing results. (MSE)

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Paper presented at the
Applied Linguistics Seminar:
Language Teaching in a Chinese
Context, August 10, 1984, Hong Kong

ED250918

# How Important is Accuracy/Mastery for Chinese Students Learning English as a Foreign Language?

## I. Introduction

In this paper we will discuss one part of a larger study of the oral communication skills of Chinese scientists in an intensive English for Science and Technology program. The results will be related to the issue of mastery/accuracy and fluency in communicating one's ideas.

Mastery of content is a strong learning tradition in Chinese education. This translates into language learning as a commitment to accuracy and a demand for error correction. But is this always necessary for Chinese students learning a foreign language? Perhaps the role of accuracy needs to be re-examined. First we need to examine why a student is studying the foreign language, English, for example. Then we need to determine how important accuracy is for those specific needs, and when is communication of one's ideas more important than a high level of accuracy. For example, do Chinese scientists going abroad for further research and study have to have the same level of accuracy as students being trained to be English teachers? If not, what is the minimal level of accuracy needed? What is the tolerance level for errors by native English-speaking science peers when listening to these Chinese scientists speaking English?

For example, a Russian scientist writing about second language teaching for scientists observed that as a scientist he was mainly interested in getting his ideas across to foreign colleagues. He did not want to be trained to be an English teacher. He and other scientists did not have the time or usually the interest (Jernudd, 1984).

This study is based on data from the Graduate School English Language Center in Beijing, otherwise known as GSELC. The program is jointly sponsored by the Chinese Academy of Sciences and the University of California-Los Angeles (UCLA).

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Its purpose is to prepare Chinese scientists to go abroad for further training and research. The program design was based on a needs assessment of Chinese scholars already studying the U.S.

There was also a commitment in the program to implement a curriculum based on the general findings of recent research on second/foreign language learning, recognizing, of course, a need to make some modifications for Chinese students, knowing that our students brought with them certain learning traditions. Still, the curriculum has not put heavy emphasis on teaching grammar rules, nor on memorization (to the extent that can be controlled), nor on extensive error correction. Rather, the program design has a heavy emphasis on:

1. Providing an acquisition-rich environment for natural exposure to English, at least as much as is possible and practical in a foreign language setting;

2. Developing communicative competence: focussing on communicating one's ideas appropriately in various formal and informal academic settings;

3. Developing strategies for speaking, listening, reading and writing that could be taken with the students when they leave the program; and

4. Lowering the social filter, that is, allowing the students to feel comfortable about expressing their ideas and listening to and reading English without the need for absolute accuracy and mastery of every word heard or read.

In the program there is still some emphasis on accuracy of grammar, pronunciation, etc., but less so than the students had been accustomed to in their other learning situations in China.

These program ideas were in sharp contrast with the foreign language learning traditions in China as described by Yu Chen-chung (1982) and by Scovell (1983). Maley (1984) observed that traditionally Chinese students tend to be fascinated with accuracy and are frequently insecure with fluency. Mastery of detail is part of the Confucian educational tradition. So, could the approach we took work, especially for non-language majors--Chinese scientists?

Thus, we sought to measure the effectiveness of the program. We were not satisfied with the results on the standardized tests. There were gains but not major ones. Also we did not want the center to be a test training center, for example, for TOEFL tests.

But we knew something very exciting was happening, and we couldn't measure it. Our entry-level students had had some passive knowledge of English (usually self-taught) but rarely if ever had they talked with a foreigner or heard English. Yet by the end of 28-30 weeks of intensive English they were able to argue with one another in English in a content course on Western philosophy of science, sometimes even yelling at each other across the room when the discussion became particularly heated.

But could these students be understood by foreign science colleagues once they went abroad? Or did they manage to communicate through a kind of mutually understood interlanguage that might not be understood by foreigners not accustomed to listening to Chinese English?

Thus the main purpose of this study was to find a way of evaluating the oral communications component of our program. So we thought why not have native English-speaking science peers evaluate a cross-section of our graduating students to see if, by the time they graduate, they are, in fact, able to be understood by native English-speaking representatives of their professional fields?

## II. Procedures

Three students from each of three different science specialties were selected as subjects: from biology, chemistry, and physics. They were selected from the graduating classes and samples of their speech were taken during the last two weeks of the 28-30-week intensive program. We selected from each specialty area a student that was considered Good, Average, and Weak. Two samples of each student's speech were taken: one planned speech sample similar to what they have to do in a formal, professional setting, and one of informal, unplanned conversation. The samples were mixed on the tapes.

Native English-speaking scientists and English teachers were recruited as evaluators. The chart below gives information on the evaluators.[2]

Information on Evaluators by Specialty

| | NS Science Peer | NS English Teacher | NNS English Teacher | Total by Specialty |
|---|---|---|---|---|
| Biologists | 5 | 5 | 6 | 16 |
| Chemists | 11 | 3 | 5* | 19 |
| Physicists | 5 | 3 | 5* | 13 |
| Total by Evaluator Background | 21 | 11 | 16 | 48 |

* Same teachers evaluated both the chemists and physicists. In all other cases the evaluators were different.

NS= Native speaker of English
NNS=Non-native speaker of English, first language, Mandarin.

Appendix A is a copy of the evaluation form with which we examined professional academic communication skills and general language skills.

III. Results

The evaluations of the native English-speaking scientists were used as the basis on which to determine whether or not the Chinese scientists could probably perform satisfactorily in English on specific professional tasks.

The evaluations of the native English-speaking teachers were used as the basis on which to evaluate the general English skills of the Chinese scientists.

The combined evaluations of the native English-speaking teachers and scientists were used for evaluating the probable success of the Chinese scientists when communicating with family members (non-scientists) of the evaluators.

A. Specific Professional Tasks

Using the means across the native English-speaking scientists, all agreed that the Chinese scientists would probably be able to do the following satisfactorily in English (with a score of 3 or more on a scale of 1-5):

#1 Make a conference presentation (3.0)

#4 Work with a graduate/undergraduate student on an individual basis (3.2)

#5 Participate in a graduate seminar (3.1)

#6 Communicate in a departmental "bag lunch" or coffee break discussion (3.3)

#7 Communicate with the departmental secretary (3.3)

#8 Work on a research team (3.4)

The following generalization could probably be made:

The scientists will probably be able to perform satisfactorily

-in an informal professional setting, and

-in a formal, prepared technical presentation not requiring much paraphrase nor simplification of language or of concepts.

Also all agreed that the Chinese scientists probably would not be able to do the following satisfactorily (scores below 3):

#2 Teach an undergraduate course (2.3)

#3 Conduct a graduate seminar (2.7)

The following generalization could probably be made:

The scientists will probably not easily be able to simplify concepts in English to those persons less specialized in the topic. This may or may not be only a language matter as some of the scientists were not accustomed to simplifying concepts in their fields even in Chinese.

B. General Language Skills

Looking at general language skills, we found that the Chinese scientists did adequately on all but pronunciation. Using the overall means of the native

English-speaking English teachers, the Chinese scientists scores 2 or more (on a scale of 1-3) on the following items:

#11 Overall reaction of listener (ease of listening) (2.1)

#12 Speed (2.3)

#14 Grammar (2.0)

#15 Word choice (2.1)

As can been seen, the overall average was not on the high end of the range of acceptability.

It was felt that the Chinese scientists were, in general, very weak in pronunciation, #13, with an average score of 1.7.

Also most will probably have difficulty communicating in English in an informal, non-academic setting with, for example, non-scientists who are family members of their science colleagues.

While an error analysis was not part of this initial study, such a study was recently done on the biologists (Chen et. al. 1984) to examine the language forms actually used to see how language form might have affected the evaluations. In the top-ranked speech sample there were only a few more grammatical errors than in the bottom-ranked one in approximately the same amount of time. Whereas, the bottom-ranked sample had significantly more errors of vocabulary (lexico-semantic) than did the top-ranked one. (See Appendix C) This suggests that perhaps a high level of accuracy in grammar might not be as important as correct word choice in order to get one's ideas across. Also while neither the top nor the bottom ranked speaker made serious pronunciation errors (that would distort the meaning or result in nonsense), the evaluators gave the top-ranked speaker a 1.93 and the bottom ranked one 1.26. This suggests that something in the pronunciation affected the overall intelligibility of the speaker, but this needs further study. In summary, it appears that poor pronunciation plus extensive lexico-semantic errors seem to negatively affect overall intelligibility more than about the same number of grammatical errors when combined with a more appropriate lexical choice and a barely acceptable pronunciation.

IV. Implications

What are the implications of these results for the issue of accuracy versus overall fluent communication of one's ideas (even with some errors)?

For the purpose of this discussion fluency will be defined as "ease of communicating one's ideas at a speed/pace that does not make the listener impatient and that does not make the ideas incomprehensible." Some minimal level of accuracy is probably necessary for fluency as defined above.

It appears that the Chinese scientists, according to the evaluators, probably 1) will be able, in most cases, to function adequately in formal and informal professional settings; and 2) have a speed of speaking that is not too slow. Also, across the board, the Chinese scientists' grammar is not considered especially good, though minimally acceptable. Thus, one might conclude that for the most part they had gotten over any serious concerns about being afraid of making mistakes in English. One might then also conclude that in the program we had been successful, to some extent, in lowering their social filter--that psychological barrier that has suggested that adolescents and adults frequently put up out of a fear of making mistakes, of sounding strange, of being different from their peers ( Burt, Dulay, and Krashen, 1982).

In Chinese this probably means not being too afraid of losing face when making a mistake in English. One very verbal Chinese computer scientist once said he had "thick skin on his face " (hou lian pi, 厚脸皮). He knew he made mistakes but he wanted to communicate so he decided not to be too worried about the mistakes he made.

Huang (1984) in her study of the strategies of good foreign language learners in China also reports that the good learners said that while they were concerned about correct form they were not afraid of making a mistake. Whereas, one poor learner admitted that her concern about making errors increased her lack of self-confidence which in turn led to more silence in the classroom

and less practice outside. This led to her falling behind the other students in her studies. Loss of face had gotten her into a vicious cycle, and now she felt she was too far behind to ever succeed in the class.

While this loss of face case illustrates only one extreme that can occur in a foreign language classroom, it can serve as an alert to teachers of the potential problems in this area. In a culture where loss of face is taken very seriously, and where accuracy of detail is a strong educational tradition, one can see how the two can combine to inhibit students, prevent them from feeling comfortable in expressing their ideas and thus inhibit fluency.

This does not mean that one must ignore accuracy. There is a minimum level of accuracy necessary to get one's ideas across. For example, in this study we have found that in a teaching situation in which there is relatively little shared knowledge, in which a concept is being taught, a high accuracy level appears to be important for pronunciation so there will be less need on the part of the audience to guess. (Also in writing formal communications a higher level of accuracy is probably important in many situations.)

We need to understand the future language needs of our students and adjust our expectations of accuracy and fluency accordingly. In this study we were concerned with scientists going abroad . For them, in many professional situations, a high degree of grammatical accuracy appears to be less important than appropriate word choice and a minimally acceptable level of pronunciation.

If you are training foreign language teachers you will ultimately be concerned about higher levels of accuracy, but one still needs to consider the long-term psychological effect of constant over-correction on the Chinese "face." For example, the cases cited in Huang's study were Chinese English as a foreign language majors in a foreign language institute in China, not scientists or non-Chinese learning a foreign language.

While there are cultural factors in China that might encourage accuracy over general communicative ability, this conflict is not unique to China. In the West as our understanding of the language learning processes and communication needs have changed (and are continuing to change) our expectations of learner performance is changing (though slowly still in many places).

Ewer, an early leader in the field of English for Science and Technology, wrote about this concern in 1979 in a paper on teacher training. (Much of his work was done in South America.)

> In evaluating the students' oral work in particular, the emphasis is on communicative ability rather than the avoidance of errors...(Ewer, 1979, p. 19)

> Student pressure...is also bringing about a relaxation of the unrealistically, unnecessarily, and inhibitorily high standards of grammar and pronunciation imposed... (Ibid p. 26)

He noted that attention needed to be focussed on "communicative tolerances" described as

> ...a sliding scale for acceptability according to the criterion of effective communication in different cases... (Ibid p.26)

Based on current research on second/foreign language learning processes, on that of Ewer in English for Science and Technology, and on studies done in a Chinese context such as this one and that of Huang, we urge that the issue of accuracy and fluency be re-examined by those teaching Chinese students. We do not, however, recommend throwing out all Chinese educational traditions. Rather, we agree with Yu Chen-chung (1983) that foreign language teaching in China can be enhanced by a wise blending of the best of Chinese and non-Chinese traditions.

Furthermore, as the needs of many English language students in China change from that of primarily reading to include now a wider range of needs, we see that foreign language teaching in China is being re-examined (Xu, 1984). In the process, we urge that realistic needs assessments be made, and that for each

major communicative setting identified, the importance of accuracy and overall ease of communicating one's ideas be considered in designing the English language curriculum.

## Notes

1. This paper was presented a the Seminar in Applied Linguistics: Language Teaching in a Chinese Context, at The Chinese University of Hong Kong, August 10, 1984. A preliminary report on this study was given at the 1984 Teachers of English to Speakers of Other Languages Convention in Houston, Texas, U.S. A., April 1984. We wish to thank Alison D'Anglejan, University of Montreal, for being a sounding board and for her suggestions at various stages of this study; however, we remain responsible for any weaknesses.

2. We wish to thank Russ Cummings (University of California, Los Angles, China Exchange Program), Charl Moore (Emory University), Bryant Moore (Atlanta, Georgia), Wang (visiting scholar, U.S. Department of Agriculture), and Zhao Shi-Dong (visiting scholar, University of Michigan) for their assistance in recruiting evaluators and mailing compensation packages to the evaluators. We also wish to thank anonymously all of the evaluators for their assistance at a minimal in-kind compensation for the time spent on these evaluations.

3. The term grammar is a rather vague notion in this study as the evaluators were not trained prior to doing the evaluations. A more detailed analysis of the transcripts would be necessary to determine which categories of grammatical errors probably caused what level of irritability/tolerance as previously noted by Tardif and d'Anglejan, 1981. H. Kwok, University of Hong Kong, also pointed out the vagueness of this term in this paper during the seminar at which this paper was presented.

Appendix A

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two sides

Presenter's Number _____ EVALUATOR'S QUESTIONNAIRE _____ Evaluator's Number

After listening to a speaker on the tape stop the tape recorder. Then complete the following evaluation. We recognize the speech samples are short, and that you have no information on the speaker's professional background, but we request that you make an evaluation for each item. Put an X in the appropriate blank after each statement. Use the full range of the scale, as needed. PLEASE DO NOT LISTEN TO THE SPEAKER MORE THAN ONCE (Except items 11-15 if necessary) BEFORE MAKING YOUR EVALUATION. PLEASE COMPLETE ALL EVALUATIONS IN ONE SITTING IF POSSIBLE.

| | With No Difficulty | | | | Would Not Be Able To At All |
|---|---|---|---|---|---|
| | 5 | 4 | 3 | 2 | 1 |
| 1. If speaker made a conference presentation I could understand it. | ___ | ___ | ___ | ___ | ___ |
| 2. The speaker would be able to teach an undergraduate course. | ___ | ___ | ___ | ___ | ___ |
| 3. The speaker would be able to conduct a graduate seminar. | ___ | ___ | ___ | ___ | ___ |
| 4. The speaker would be able to work with graduate/ undergraduate students on an individual basis. | ___ | ___ | ___ | ___ | ___ |
| 5. The speaker would be able to participate in a graduate seminar. | ___ | ___ | ___ | ___ | ___ |
| 6. The speaker would be able to communicate in a departmental "bag lunch" or coffee break discussion. | ___ | ___ | ___ | ___ | ___ |
| 7. The speaker would be able to communicate with the departmental secretary or assistant. | ___ | ___ | ___ | ___ | ___ |
| 8. The speaker would be able to work on a research team. | ___ | ___ | ___ | ___ | ___ |
| 9. Adult members in my family who are not scientists would be able to understand the speaker. | ___ | ___ | ___ | ___ | ___ |

Appendix B

## Overall Means of Questions by Evaluator Group

### I. Native English-Speaking Scientists

| | Q1 | Q2 | Q3 | Q4 | Q5 | Q6 | Q7 | Q8 | Q9 |
|---|---|---|---|---|---|---|---|---|---|
| Mean | 2.96 | 2.33 | 2.65 | 3.16 | 3.07 | 3.27 | 3.28 | 3.39 | 2.8 |
| Standard Deviation | .705 | .618 | .617 | .572 | .585 | .600 | .617 | .540 | - |
| Standard Error | .288 | .252 | .252 | .233 | .239 | .245 | .252 | .220 | - |

| | Q11 | Q12 | Q13 | Q14 | Q15 |
|---|---|---|---|---|---|
| Mean | 2.07 | 2.28 | 1.73 | 1.97 | 2.11 |
| S.D. | .343 | .361 | .418 | .226 | .247 |
| S.E. | .140 | .147 | .171 | .092 | .101 |

### II. Native English-Speaking English Teachers

| | Q1 | Q2 | Q3 | Q4 | Q5 | Q6 | Q7 | Q8 | Q9 |
|---|---|---|---|---|---|---|---|---|---|
| Mean | 2.94 | 2.44 | 2.46 | 3.07 | 3.16 | 3.25 | 3.37 | 3.4 | 2.63 |
| Standard Deviation | .718 | .572 | .576 | .702 | .622 | .602 | .646 | .483 | - |
| Standard Error | .293 | .233 | .235 | .286 | .254 | .247 | .264 | .197 | - |

| | Q11 | Q12 | Q13 | Q14 | Q15 |
|---|---|---|---|---|---|
| Mean | 2.11 | 2.33 | 1.61 | 1.96 | 2.05 |
| S.D. | .384 | .401 | .467 | .416 | .429 |
| S.E. | .157 | .164 | .190 | .170 | .175 |

### III. Non-Native English-Speaking English Teachers

| | Q1 | Q2 | Q3 | Q4 | Q5 | Q6 | Q7 | Q8 | Q9 |
|---|---|---|---|---|---|---|---|---|---|
| Mean | 3.42 | 2.05 | 2.15 | 3.15 | 2.9 | 3.15 | 3.48 | 3.54 | -- |
| Standard Deviation | .691 | .764 | .629 | .638 | .595 | .556 | .480 | .561 | -- |
| Standard Error | .282 | .312 | .257 | .260 | .243 | .227 | .196 | .229 | -- |

| | Q11 | Q12 | Q13 | Q14 | Q15 |
|---|---|---|---|---|---|
| Mean | 2.24 | 1.96 | 1.75 | 1.96 | 1.97 |
| S.D. | .219 | .235 | .372 | .133 | .085 |
| S.E. | .089 | .096 | .152 | .054 | .035 |

Appendix C

Error Analysis of Top and Bottom Ranked Biologists

| Speaker Ranking | Total No. of Errors | Lexico-Semantic Errors | Grammatical Errors | Serious Phono. Errors |
|---|---|---|---|---|
| Top | 49 | 22.4% (11/43) | 71.4%(35/49) | 2% (1/49) |
| Bottom | 121 | 73.6% (89/121) | 26.4%(32/121) | - - |

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